University of California
Lawrence Livermore National Laboratory

Nonproliferation, Arms Control, and International Security Directorate

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NAI's program in proliferation prevention and arms control tackles the problem of WMD proliferation at its source

Mission

Our program in proliferation prevention and arms control integrates laboratory activities, capabilities, and technologies for nuclear materials control and combines our treaty verification R&D with policy analysis and support for U.S. arms control activities.

Stopping Threats at the Source

The U.S. wants to be proactive, not reactive, in dealing with the threat of WMD proliferation and, wherever possible, stop proliferation at its source. Technologies and protocols for tracking, controling, and accounting for nuclear materials are a key element in preventing the spread of nuclear weapons. However, the ubiquitous nature of chemical and biological weapon materials presents special challenges. For all types of weapons, arms control agreements—and verified compliance with the agreements—are critical for preventing proliferation.

Contributions to Arms Control

Livermore has provided technical and analytical support to U.S. arms control efforts for more than 40 years. Over the years, we contributed to negotiations of the SALT I and II treaties, the START I and II agreements, and the Limited, Threshold, and Comprehensive Test Ban treaties. We assess the impact of proposed treaty provisions, both in terms of U.S. ability to monitor other countries and in terms of protecting sensitive information during foreign inspections of U.S. facilities. We also develop monitoring and verification technologies, including sensors and data analysis methods, and participate in field trials to prepare for inspections in the U.S. and abroad. We are currently developing techniques and analyses to support U.S.–Russian discussions on mutual reciprocal inspections of material coming from dismantled weapons and on possible measures for increased transparency during the acutal dismantlement process.

Controlling Nuclear Materials

Large quantities of surplus nuclear materials are resulting from the dismantlement of thousands of nuclear weapons, both in the U.S. and in Russia. We work with the DOE and other laboratories to improve the control of nuclear materials and to track inventories and the disposition of nuclear materials worldwide. For example, we are working with numerous research and manufacturing facilities in Russia to upgrade the protection, accountability, and control of nuclear materials stored or processed at those sites. We are also assisting the Russian navy and the Murmansk Shipping Company in their efforts to enhance to protection of fissile fuel for their nuclear-powered vessels. In addition, we are collaborating with the Russians to evaluate options for permanent disposition of excess fissile materials and to develop mutually acceptable detection methods for use in on-site inspections of nuclear facilities. These cooperative activities help greatly to improve the confidence that both countries have in each other's nuclear dismantlement programs.

Recent Accomplishments

• Development and testing, in collaboration with Russian scientists, of nuclear-material monitoring equipment as part of U.S.–Russian agreements on transparency during the dismantlement of nuclear weapons and storage of nuclear materials.

• Collaboration with research and manufacturing facilities in the former Soviet Union to enhance the protection, control, and accountability of nuclear materials stored or processed at those sites.

• Work with the Russian navy and the Murmansk Shipping Company to improve the protection of fuel for their nuclear-powered vessels.

• Coordination of the first-ever nuclear smuggling exercise to assess domestic capabilities in nuclear forensics and help guide U.S. efforts (technology and policy) to counter nuclear smuggling.

Benefits to the Nation

Clearly, the best way to stop proferation is before it occurs. We draw on laboratory strengths in weapons technology, nuclear materials, chemical and biological science, instrumentation and monitoring, and site security, among others, to provide the U.S. with the technical and analytical support needed to negotiate and verify compliance with arms control measures and test ban treaties. International cooperative efforts, through the International Atomic Energy Agency and with Russia and China, are an important component of this program.

Contact

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